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51



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/415,815	10/12/1999	KLAUS-PETER LINDNER	9090-0149	5340
23364	7590	08/02/2004	<div>EXAMINER</div> <div>GARCIA OTERO, EDUARDO</div>	
BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314			<div>ART UNIT</div> <div>2123</div>	<div>PAPER NUMBER</div>
DATE MAILED: 08/02/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/415,815	Applicant(s) LINDNER ET AL.	
	Examiner Eduardo Garcia-Otero	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39,41 and 43-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39,41 and 43-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION: Final Action

Introduction

1. Title is: APPARATUS FOR USE IN AN INDUSTRIAL PROCESS AND PLANT INCLUDING SUCH APPARATUSES AS WELL AS METHOD FOR SIMULATING OPERATION OF SUCH A PLANT
2. First joint inventor is: LINDNER
3. Applicant's Amendment was received 5/24/2004.
4. Pending claims are 39, 41, and 43-50.
5. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) to 10/29/98.

Index of Prior Art

6. **McClanahan** refers to McClanahan et al., US Patent 4,613,952
7. **Banks** refers to Handbook of Simulation: Principles, Methodology, Advances, Applications, and Practice, by Jerry Banks (Editor), John Wiley & Sons, Inc., ISBN: 0-471-13403-1, August 1998.
8. **Tucker** refers to The Computer Science and Engineering Handbook, by Allen B. Tucker, Jr. (Editor-in-chief), CRC Press, ISBN: 0-8493-2909-4, 1996.
9. **Tabak** refers to Advanced Microprocessors, by Daniel Tabak, McGraw-Hill, Inc., ISBN 0-07-062843-2, 1995.
10. **Head** refers to Claude D. Head, III, US Patent 6,076,652.
11. **Webster** refers to Webster's Third New International Dictionary, Merriam-Webster Inc, copyright 1993.
12. **Microsoft Computer Dictionary** refers to Microsoft Computer Dictionary, Fourth Edition, by Microsoft Press, JoAnne Woodcock as Senior Contributor, ISBN 0-7356-0615-3, May 1999.
13. **Perry** refers to Perry's Chemical Engineer's Handbook, Seventh Edition, 1997, pages 8-4 to 8-11, and 8-34, and 8-35.

Applicant's Remarks

14. Applicant raises 5 issues at Remarks page 6-7:

Art Unit: 2123

15. (1)-DATA CARRIER, OBJECTION TO CLAIM 41. Applicant asserts that the term “data carrier” is simply a memory “which is not inconsistent with its generally accepted meanings”. Applicant discusses the source of this term as a literal translation from the German phrase “Datenträger”. The difficulty resides with the fact that the term “carrier” is a specific term of art with very a different definition than Applicant intends, see claim objections below.
16. (2)-35 USC 101, CLAIMS 46-48, “CONTROL UNIT”. Per Applicant’s assertions and amendments, the term “control unit” is interpreted as a “machine” per 35 USC 101. The 35 USC 101 rejections are withdrawn.
17. (3)-MOOT. Claim 40 has been cancelled, thus the related indefiniteness rejection is moot.
18. (4 and 5)-PRIOR ART REJECTIONS. The claims have been substantially amended, and thus amended rejections are provided below.

Claim Objections

19. Claim 41 is objected to for giving a term a meaning which is repugnant to the usual meaning of the term. Specifically, a “**data carrier**” is used to “memorize” software. Note that the term “carrier” is defined by Microsoft Dictionary as “In communications, a specified frequency that can be modulated to convey information.” The difficulty with Applicant’s terminology is that frequency carriers contain information only in a transient sense, they do not store data in a permanent sense. Further, there are 35 USC 101 issues with attempting to claim electromagnetic waves.
20. Additionally, Applicant Remarks page 6 explicitly defines the term “data carrier” as equivalent to “memory”, and Applicant does not intend “carrier” to be interpreted per Microsoft Dictionary. Thus, the Examiner objects to Applicant’s “data carrier” term in claim 41 as repugnant, because the term “data carrier” has a specific meaning (term of art) which is not intended by the Applicant. See MPEP 608.01(o), emphasis added:

608.01(o) Basis for Claim Terminology in Description

The meaning of every term used in any of the claims should be apparent from the descriptive portion of the specification with clear disclosure as to its import; and in mechanical cases, it should be identified in the descriptive portion of the specification by

Art Unit: 2123

reference to the drawing, designating the part or parts therein to which the term applies.

A term used in the claims may be given a special meaning in the description. **No term may be given a meaning repugnant to the usual meaning of the term.**

Usually the terminology of the original claims follows the nomenclature of the specification, but sometimes in amending the claims or in adding new claims, new terms are introduced that do not appear in the specification. The use of a confusing variety of terms for the same thing should not be permitted.

New claims and amendments to the claims already in the application should be scrutinized not only for new matter but also for new terminology. While an applicant is not limited to the nomenclature used in the application as filed, he or she should make appropriate amendment of the specification whenever this nomenclature is departed from by amendment of the claims so as to have clear support or antecedent basis in the specification for the new terms appearing in the claims. This is necessary in order to insure certainty in construing the claims in the light of the specification, *Ex parte Kotler*, 1901 C.D. 62, 95 O.G. 2684 (Comm'r Pat. 1901). See 37 CFR 1.75, MPEP § 608.01(i) and § 1302.01.

The specification should be objected to if it does not provide proper antecedent basis for the claims by using form paragraph 7.44.

Claim Interpretation

21. In claim 49, the preamble term **“a simulation arrangement”** is interpreted as a machine, per 35 USC 101.

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action: (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
23. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: 1. Determining the scope and contents of the prior art. 2. Ascertaining the differences between the prior art and the claims at issue. 3. Resolving the level of ordinary skill in the pertinent art. 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
24. **Claims 39, 41, and 43-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banks in view of Perry and MPEP § 2144.04(VI)(C).**
25. In claim 49 limitation [1], and claim 50 limitation [2], and claim 46 limitation [1], the term **“a software apparatus model associated with at least one of the field devices...”** is disclosed by Banks at Page 397 “portable models”, and at Page 6 “A model is a representation of an actual system”, and at Page 7 “A resource is an entity

that provides service to dynamic entities”, and at Page 397 “many existing simulation languages using object terminology”, and at Page 398 “Resource objects and their behavior may be defined”. Note that models must be storable in a memory at another location in order to be portable. Additionally, note that it is inherent that a simulation model object (such as a software apparatus model) in an object-oriented simulation will be stored in memory, and that this memory will be accessed during the simulation. Note that Banks at Page 398 states “C++ is an object-oriented extension to the C programming language”. Also see Page 409 “YANSL” and “GPSS/H” and “SLAM” and “SIMAN” and “INSIGHT”.

26. In claim 49 limitation [2], and claim 47 limitation [1], the term **“said software apparatus model is stored in the field device with which said software apparatus model is associated”** is disclosed by MPEP § 2144.04(VI)(C) Legal Precedent. *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) states “the particular placement provided no novel or unexpected result”. Here, storing the software model with the associated field device provides no novel or unexpected results. This type of decentralized memory has well known advantages and disadvantages. The well known advantage is that the software is conveniently physically near the hardware, similar to buying a printer which comes with a CD containing the printer drivers. The well known disadvantage is that the version control is difficult. For example, if an error is found in the printer driver software, then another CD must be mailed to all printer owners. Interestingly, the modern trend is to not provide CDs with the hardware, but instead to require the buyer to download the software through the internet.
27. Also see Banks at Page 397 “portable models”. Further note that this decentralized model storage is very similar to the “plug and play” systems whereby peripheral devices identify themselves to a personal computer.
28. In claim 49 limitation [3], and claim 50 limitation [3], and claim 44 limitation [1], the term **“said software apparatus model is loadable from the apparatus into the central control unit via the bus”** is disclosed by Banks at Page 397 “portable models”. Note that models must be storable in a memory at another location in order

Art Unit: 2123

to be portable. Additionally, note that it is inherent that a simulation model object (such as a software apparatus model) in an object-oriented simulation will be stored in memory, and that this memory will be accessed by a central control unit via a bus during the simulation. Note that Banks at Page 398 states "C++ is an object-oriented extension to the C programming language".

29. Note that one illustrative example of Banks' "portable models" would be a floppy disk or Compact Disk (CD) which often is included in the purchase of a printer for a personal computer. Said floppy or CD contains "memorized software... including parameters, functionalities, and programs of the apparatus". Said floppy or CD would be placed into the proper slot of a personal computer, and downloaded through a bus into the memory of the personal computer. This type of "portable model" (e.g., printer driver on a CD) has certain advantages such as convenience. However, this use of CDs does contain several drawbacks as well: the added expense of the CD itself, the possibility of losing the CD, and the substantial version control difficulties with correcting or upgrading existing CDs.
30. Alternately, central control of software (for example, downloading the printer driver software directly from the printer company website through the internet) offers the advantage of centrally controlling and instantly correcting or upgrading the available software, as well as the reduced cost of not creating and not handling CDs.
31. Note that *In re Preda*, 401 F.2d 825, 159 USPQ 342, 344 (CCPA 1968) states "in considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." Thus, one of ordinary skill in the art would interpret Banks as including disclosing porting said "portable models" (Banks terminology) using standard porting techniques, such as physically carrying a CD, or transferring over a bus. Said printer CD is one well known example. See also MPEP § 2144.04(VI)(C). *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) states "the particular placement provided no novel or unexpected result".
32. In claim 49 limitation [4], and claim 44 limitation [2], the term **"the central control unit being provided with the parameters, functionalities of the field device with**

which said software apparatus model is associated, so that the field device with which said software apparatus model is associated can be simulated in the central control unit" is disclosed by Banks at Page 397 "portable models". Note that models must be storable in a memory at another location in order to be portable. Additionally, note that it is inherent that a simulation model object (such as a software apparatus model) in an object-oriented simulation will be stored in memory, and that this memory will be accessed by the central control unit via a bus during the simulation. Note that Banks at Page 398 states "C++ is an object-oriented extension to the C programming language".

33. In claim 39 limitation [1], the term **"the software of said software apparatus model is formulated in a uniform program language with which said functionality and said parameters of field device with which said software apparatus is associated can be explicitly simulated in the central control [unit]"** is disclosed by Banks at Page 398 states "C++ is an object-oriented extension to the C programming language".
34. In claim 41 limitation [1], the term **"a data carrier"** is disclosed by Perry page 8-7 "modern plants are controlled by digital computers" and page 8-6 Simulation of Dynamic Models". Note that digital computers contain microprocessors (or "central control units" in Applicant's terminology) and buses and memories (or "data carriers" in Applicant's terminology) and multiple apparatuses. See page 8-34 for typical systems with multiple apparatuses.
35. In claim 41 limitation [2], the term **"said software is memorizable on said data carrier and usable by a software program in the central control unit"** is disclosed by Banks at Page 397 "portable models" and at Page 398 states "C++ is an object-oriented extension to the C programming language".
36. In claim 50 limitation [1], and claim 48 limitation [1], the term **"a central control unit, a bus and a plurality of apparatuses connected to the central control unit via the bus"** is disclosed by Perry page 8-7 "modern plants are controlled by digital computers" and page 8-6 Simulation of Dynamic Models". Note that digital computers contain microprocessors (or "central control units" in Applicant's

Art Unit: 2123

terminology) and buses and memories (or “data carriers” in Applicant’s terminology) and multiple apparatuses. See page 8-34 for typical systems with multiple apparatuses.

37. In claim 43 limitation [1], and claim 45 limitation [1], the term **“software [apparatus models] are modifiable by said central control unit depending on the result of simulation”** is disclosed by Banks at page 33 “Modeling Principle 2 The secret to being a good modeler is the ability to remodel... continually refined, updated, modified, and extended” and “Modeling Principle 3 The modeling process is evolutionary because the act of modeling reveals important information piecemeal”. Also see Perry page 8-6 Simulation of Dynamic Models”.
38. MOTIVATION. At the time of the invention, one of ordinary skill in the art would be motivated to use Perry and MPEP § 2144.04(VI)(C) to modify Banks. One of ordinary skill in the art would begin with Banks as a basis for general simulation modeling principles, and then would be motivated to use Perry for specific techniques used in modern processing plants (such as control “by digital computers” at Perry page 8-7) because Perry is the standard handbook for chemical engineering. Applicant’s claimed invention locates the software models with the related apparatuses (decentralized), and thus differs from the standard centralized location of the software models in a single main memory.
39. In MPEP § 2144.04(VI)(C), *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) states “the particular placement provided no novel or unexpected result”. Thus, the issue is whether the claimed particular (decentralized) location of the software models provides any novel or unexpected result.
40. The battle between centralized versus decentralized software has been waging for decades, and the advantages and disadvantages of each system are well known. As discussed above with respect to printers and their CDs, there are well known advantages (and some disadvantages) to having software physically located with the hardware (decentralized software). Similarly, there also well known advantages (and some disadvantages) to having the software centralized and thus not physically associated with the hardware (centralized software).

Art Unit: 2123

41. In the area of networks, a similar battle (or balancing act) has been raging for decades with respect to whether application software should be centralized in the server, or decentralized in the client computer. Thus, the Examiner concludes that the claimed particular placement provides "no novel or unexpected result" per *In re Kuhle*.

Response to Amendments or new IDS-FINAL OFFICE ACTION

42. Applicant's amendments or new IDS necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusions

43. All pending claims stand rejected.
44. If Applicant can persuasively assert **novel or unexpected results** from the claimed placement of the software models, then said assertions might overcome the above rejections.

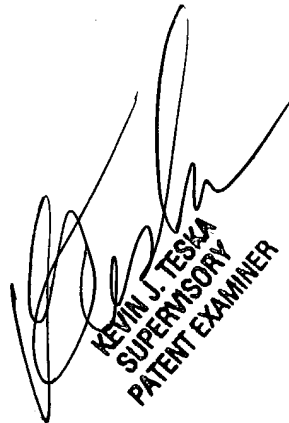
Communication

45. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eduardo Garcia-Otero whose telephone number is 703-305-0857. The examiner can normally be reached on Tuesday through Friday from 9:00 AM to 7:00 PM. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone number for this group is 703-872-9306. Any inquiry of a

Art Unit: 2123

general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.

* * * *



KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER